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**JUL 07 2008**

Docket No.: 67,341-1985 (03MRA0135)

**IN THE UNITED STATES PATENT AND TRADEMARK OFFICE  
BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES**

Applicant: Lee Watts, et al.  
Serial No.: 10/775,033  
Filed: February 9, 2004  
Group Art Unit: 3753  
Examiner: Fox, John C.  
Title: EXHAUST PIPE VALVE

M/S AF  
Commissioner for Patents  
P.O. Box 1450  
Alexandria, VA 22313-1450

**REPLY BRIEF**

Dear Sir:

Responsive to the Examiner's Answer dated May 8, 2008, please consider the following remarks. The appeal brief fee has already been paid. Any additional fees or credits may be charged or applied to Deposit Account No. 50-1482 in the name of Carlson, Gaskey & Olds.

**REMARKS**

Appellant respectfully reiterates all of the arguments made in the Appeal Brief and in previous Office Action responses to address the Examiner's Answer. Additional arguments, prepared in response to new issues raised in the Examiner's Answer, are set forth below.

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**A. Anticipation Rejection Over Thauer**

**Claims 1, 3-5, 11-13, and 16**

The examiner argues that the upper face of component 13 and the lower face of component 3 comprise sealing surfaces; however, these surfaces do not provide a "sealing" effect. Any gas that leaks beyond the conical surfaces 9, 10 flows through the clearance between the shaft 5 and the bore 3a and through the clearance between the washer 13 and the shaft 5. The component 13 of Thauer does not, and cannot, provide a sealing effect.

Further, one of ordinary skill in the art would not consider Thauer as providing secondary sealing between the components 13 and 3. Component 13 is clearly described as an insulating disc that is provided to shield the spring from the effect of heat from the exhaust pipe. See col. 2, lines 36-39. There is no disclosure or suggestion in Thauer that this insulating disc additionally has a sealing surface or provides any type of sealing effect.

The examiner argues that surfaces of components 13 and 3 in Thauer can be considered as sealing faces because they are flat abutting surfaces. The examiner further argues that "it would be inherent to this structure that a seal of some degree is formed between the washer and bearing. For example, a sufficient seal to prevent atmospheric gases from entering the bearing." See Final Office Action of April 13, 2006, page 2, lines 14-16. Appellant respectfully asserts that this is not a reasonable interpretation of Thauer.

As discussed above, element 13 in Thauer comprises an insulating disc that is used to shield the spring 11 from the effect of heat from the exhaust pipe 2, and as such cannot provide a sealing effect. In the only Figure of Thauer, it is clear that there is an air gap between the outer surface of the shaft 5 and an inner circumference of the insulating disc 13. Gases can clearly flow through this air gap and into the bearing 3. Thus, the insulating disc 13 is structurally incapable of providing secondary sealing as defined in the claims.

Further, the insulating disc 13 does not even satisfy the examiner's example of a "sufficient seal to prevent atmospheric gases from entering the bearing" because, as explained above, gases can clearly enter the bearing via a center opening in the insulating disc 13.

The examiner argues that it is "inherent" that there is a seal at this location in Thauer, however, the fact that a certain result or characteristic may occur or be present in the prior art is

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not sufficient to establish the inherency of that result or characteristic. The insulating disc 13 of Thauer cannot be considered to inherently be a seal because this contradicts the Figure of Thauer, which shows a gap between the disc 13 and the shaft 5.

The examiner further argues (referring to col. 1, lines 48-55 and col. 2, lines 8-12 of Thauer) that component 13 will inherently reduce air flow across the surface of the bearing because such an abutting contact is the same as the flat, abutting contact between the flange 4 of the bearing and the surface of the body surrounding the opening 1, which is disclosed as a seal. The examiner further states that "seal" is interpreted to mean "a substantial reduction in flow, even if not a complete elimination of flow." Examiner's Answer, page 7, lines 1-2.

First, the portions of Thauer referred to by the examiner recite that there is a sealing effect provided between these two components. No such effect is described or alluded to with regard to the insulating disc 13 of Thauer. Thauer clearly describes this disc as being used to shield the spring from the effect of heat. If this disc was also to provide some sort of sealing effect, Thauer would have described it as doing so in the same manner as Thauer did with regard to the flange 4 of the bearing.

Second, the insulating disc 13 does not meet the examiner's definition of a substantial reduction in flow. There cannot be a substantial reduction in flow when there is a significant gap between the disc and the shaft. The examiner argues that the space between the washer and the bearing of Thauer will be considerably less than the gap R between the appellant's shaft and washer; however, there will still not be a "substantial reduction in flow" provided by the insulating disc because of the huge gap that exists between the disc and shaft in Thauer. Appellant's "very close running clearance R," which assists in centering of the spindle within the washer, is significantly tighter than the gap shown in Thauer.

Thus, for the reasons set forth above, claims 1, 3-5, 11-13, and 16 are allowable over Thauer.

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**B. Obviousness Rejection Over Thauer and Kipp****Claim 6**

Claim 6 recites that the spring is a spring washer. The examiner argues that it would be obvious to use a wave spring 64 as disclosed in Kipp in place of the coil spring taught by Thauer. Appellant respectfully disagrees. There is no teaching in Thauer or Kipp to suggest that a wave spring would be appropriate for the configuration taught by Thauer. The Figure of Thauer shows that the coil spring cannot be simply interchanged with a wave washer as implied by the examiner.

The examiner argues that both types of springs are well known and that the rational of simple substitution applies because it involves "the substitution of a wave spring for a coil spring to obtain the predictable result of performing the same biasing function in the same valve combination." Examiner's Answer, page 8, lines 6-7. Appellant respectfully asserts that the configurations of Thauer and Kipp are significantly different from each other.

Thauer discloses a single bearing configuration where a spring 11 is used to bias surfaces 9 and 10 together to provide a sealed configuration. Kipp discloses a configuration where a pair of bushings 66, 78 is used. The second bushing 66 provides a stable mounting for the shaft 66 and closes space 74. A retainer 62 is press fit onto the shaft 60 and together with the bushing 66 sandwiches a wave washer 64. The retainer 62 is positioned such that the wave washer is contracted in the axial direction and exerts a spring force between the bushing 66 and the retain 62 to bias the shaft 60 in the direction of arrow 61. This in turn biases the washer 72 against the washer 70, which sandwiches the washer 70 between the washer 72 and end cap 68 to provide the gas seal, see Figure 1. As Kipp teaches an opposite biasing configuration from that disclosed in Thauer there cannot be a simple substitution of elements.

Thus, appellant respectfully asserts that there is no motivation or suggestion to modify Thauer in the manner proposed by the examiner.

**Claims 14-15**

Claim 14 recites that the bearing sleeve is press-fitted into the housing. The examiner argues that it would be obvious to replace the threaded attachment of Thauer with a press-fit

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attachment as taught by Kipp to secure the sleeve better. Appellant asserts that there is no motivation or suggestion to modify Thauer in the manner proposed by the examiner.

The examiner asserts that the valve of Thauer cannot be preassembled and screwed in because the valve plate 7 is larger than the hole. However, Thauer clearly states that "the internally threaded opening 1 in such event [is] proportioned to permit insertion therethrough of the throttle valve 7, where by the preassembled unit may be readily applied to the exhaust pipe simply by threaded the bearing 3 into the bore or opening of the exhaust pipe." Col. 2, line 67 through col. 3, line 5.

Further, the examiner argues that press-fitting a member in a bore is a more secure attachment than threading. However, press-fitting a component requires an increase in insertion force, requiring tooling press to apply such a force. This significantly increases assembly cost, which is disadvantageous compared to simply threading the assembly into place. As such, appellant respectfully asserts that there is no motivation or suggestion to modify Thauer in the manner proposed by the examiner and that claims 14-15 are allowable over the recited combination.

### **C. Obviousness Rejection Over Thauer**

#### **Claims 7-8**

The examiner argues that the materials recited provided well known characteristics at the time the invention was made that that it would be obvious to use these materials. Appellant respectfully asserts that there is no disclosure or suggestion that the claimed materials would be beneficial for utilization for exhaust valve pipe components as defined in the claims. Thus, appellant respectfully asserts that it is not obvious to modify Thauer in the manner proposed by the examiner. For similar reasons, claim 8 is also allowable over Thauer.

#### **Claims 9-10**

Claims 9 and 10 recite that the valve spindle is made from a steel that has a Werkstoff No. 1.4122 or 1.4104. For reasons similar to those set forth above with regard to claims 7-8, claims 9 and 10 are also allowable.

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**Claims 17-18**

Claims 17 and 18 recite that the bearing sleeve is made from steel that has a Werkstoff No. 1.4122 or 1.4104 as defined in claim 18. For reasons similar to those set forth above with regard to claims 7-8, claims 17 and 18 are also allowable.

**D. Obviousness Rejection Over Thauer, Lee, and Welty****Claim 19**

The examiner argues that bearings function in a similar manner in all environments of use and that there is sufficient nexus between the patents to suggest the combination without hindsight to the application. The examiner further argues that the materials recited are found in the references performing their expected functions and the proposed combination would produce exactly the same result as the claimed device. Appellant disagrees.

The examiner is arguing that the coatings disclosed in Lee and Welty would be appropriate for use in Thauer. The examiner's assertion that bearings function in a similar manner in different environments is irrelevant. The issue is whether the coatings disclosed in Lee and Welty would be obvious choices for an exhaust pipe component such as that of Thauer. There is absolutely no suggestion found in the references or the prior art to indicate that the coatings disclosed in Lee and Welty would be appropriate for a high temperature environment such as that of Thauer. Further, there is nothing in the prior art to suggest that any one coating is appropriate for use in all bearing environments.

Lee is directed to a drive motor that is used to rotate a multi-faceted mirror, which is used to change the path of a laser beam in a laser printer. Welty discloses a bearing surface in a water-mixing valve. The bearing in Thauer is used in an exhaust system and is subjected to extremely high temperatures. The environment in which the bearing surfaces of Lee and Welty operate, is in no way similar to that of Thauer. There simply is no disclosure in Lee or Welty to suggest that the Lee or Welty coatings would be effective at high temperatures.

The examiner is clearly engaging in hindsight reconstruction of the claimed invention, using appellant's structure as a template and selecting elements from the references to fill the

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gaps. This is not permissible under 35 U.S.C. 103(a). Thus, for the reasons set forth above, claim 19 is allowable over the recited combination.

#### **Claim 20**

For the reasons set forth above with regard to claim 19, claim 20 is also allowable. Further, claim 20 recites that the ceramic coating comprises at least one selected from the group consisting of titanium, aluminum, and chromium. None of the references disclose such a coating for use in a high temperature exhaust environment such as that of Thauer. Thus, claim 20 is allowable over the recited combination.

#### **Claim 21**

For the reasons set forth above with regard to claim 19, claim 21 is also allowable. Further, claim 21 recites that the ceramic coating further comprises at least one of yttrium and nitrogen. Again, none of the references disclose such a coating having a combination of elements set forth in claim 20 and 21. Further, none of the references disclose or suggestion that the claimed coating is appropriate for use in high temperature applications such as that of Thauer. Thus, claim 21 is allowable over the recited combination.

#### **Claim 22**

For the reasons set forth above with regard to claim 19, claim 22 is also allowable. Further, claim 22 recites the feature of a second ceramic coating disposed on the ceramic coating, wherein the second ceramic coating comprises at least one selected from the group consisting of titanium, aluminum, and chromium. None of the references disclose a combination of two ceramic coatings as claimed, which would be capable of operating in the high temperature environment of Thauer.

The two coatings 21, 23 of Welty identified by the examiner as corresponding to the claimed two ceramic coatings, are not identified as being useful or appropriate for use with exhaust system components at bearing surfaces. The Welty coatings are used for water mixing valves, which operate under significantly different operating conditions than exhaust valves.

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One coating of Welty, i.e. layer 23, is disclosed as being used for a strengthening layer that has a high hardness to prevent scratching. See col. 4, lines 57-58. The other coating of Welty, i.e. layer 21, is disclosed as being used for an adhesion-promoting layer to ensure adhesion of the strengthening layer 23. See col. 5, lines 41-46. Further, these coatings are only disclosed as intermediate layers with a further amorphous diamond layer 30 providing the outermost coating at the bearing surface.

As such, there is no disclosure or teaching in the references to suggest that coatings 21, 23 would be beneficial or useful for a bearing configuration and environment such as that of Thauer. Thus, claim 22 is allowable over the recited combination.

**E. Obviousness Rejection Over Thauer and Rautenstauch**

**Claim 23**

The examiner argues that the gland 36 is analogous to a spring and washer. Appellant respectfully asserts that one of ordinary skill in the art would never consider gland 36 as corresponding to a spring and washer.

Element 36 comprises a gland that is used to enclose a packing 35 inside a retainer 26 fixed to a housing 10. Bolts 41 are threaded through the gland 36 and the retainer 26. There is absolutely no resilient bias or spring force such as that provided by the spring 11 of Thauer, which holds sealing surfaces 9, 10 together. Using the packing and bearing configuration of Rautenstauch in the valve of Thauer simply would not work because of the lack of resiliency of the gland connection. The resiliency of spring 11 is required in Thauer to maintain the shaft 5 concentrically within the bore 3a to provide adequate clearance. This centering function and clearance provision clearly would not be accomplished by the bolted attachment of Rautenstauch. As such, the arrangement of Rautenstauch cannot be reasonably considered as analogous to the spring and washer of Thauer.

Further, the gland 36 does not provide any type of insulating function to shield a spring from the effect of heat from an exhaust pipe, such as that provided by the insulating disc 13 in Thauer. As the gland 36 of Rautenstauch is clearly neither a spring nor an insulating disc,



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appellant respectfully asserts that it is not reasonable to interpret the gland 36 as corresponding to the spring 11 and washer 13 of Thauer.

As such, Rautenstauch does not disclose a washer with a secondary sealing surface to prevent gas from flowing between the washer and the valve spindle as defined in the claims. The examiner has admitted that Thauer also does not disclose structures as defined in claims 23-25. Thus, the combination of references does not disclose, suggest, or teach all of the claimed features.

Further, with regard to claims 23-25, the examiner argues that it would have been obvious to have used a packing and bearing configuration as taught by Rautenstauch in the valve of Thauer to improve the seal thereof. The examiner further argues that the modification is supported because it is a mere substitution of one known configuration for another known configuration. Appellant respectfully disagrees.

The proposed modification cannot render the prior art unsatisfactory for its intended purpose (see MPEP 2143.01 (V)) and cannot change the principle of operation of a reference (see MPEP 2143.01 (VI)). If the proposed modification would render the prior art invention being modified unsatisfactory for its intended purpose, then there is no suggestion or motivation to make the proposed modification. In re Gordon, 7233 F.2d 900, 221 USPO 1125 (Fed. Cir. 1984). Substituting the gland configuration of Rautenstauch for Thauer would render Thauer inoperable as no biasing function would be provided. As such, the modification cannot be supported.

Thus, for the reasons set forth above, claim 23 is allowable over the recited combination.

#### **Claim 24**

For the reasons set forth above with regard to claim 23, claim 24 is also allowable. Further, claim 24 recites that the secondary sealing and secondary bearing surfaces have conical profiles. None of the references disclose secondary sealing and bearing surfaces having the claimed profile in combination with the claimed primary sealing and bearing surfaces. The examiner argues that this is clearly shown in Rautenstauch; however, the examiner fails to provide any specific identification of where the conical secondary bearing and sealing surfaces

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are disclosed. The examiner only makes a vague reference to the figure leaving appellant to guess at the examiner's interpretation. Thus, the examiner has failed to set forth a prima facie case of obviousness for claim 24.

### Claim 25

For the reasons set forth above with regard to claim 23, claim 25 is also allowable. Further, claim 25 recites that the primary sealing surface and the primary bearing surface each have a conical profile that cooperate with each other to form a primary seal and wherein the secondary sealing surface and the secondary bearing surface each have a conical profile that cooperate with each other to form a secondary seal. None of the references disclose the claimed combination of first and second seals.

Thauer clearly does not include first and second seals. The insulating disc 13 of Thauer does not form a seal, and thus cannot be reasonably interpreted as providing a seal. Even if this could be considered a seal, this interface clearly does not have conical profiles as claimed. Rautenstauch also does not disclose a secondary seal with conical profiles as claimed. Again, the examiner argues that this is shown in the figure of Rautenstauch but fails to provide any specific details, leaving appellant to guess at the examiner's interpretation.

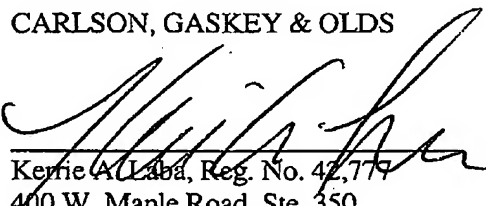
Thus, appellant respectfully asserts that claim 25 is allowable over the recited combination.

### CONCLUSION

For the reasons set forth above and in the Appeal Brief, the rejection of all claims is improper and should be reversed.

Respectfully submitted,

CARLSON, GASKEY & OLDS



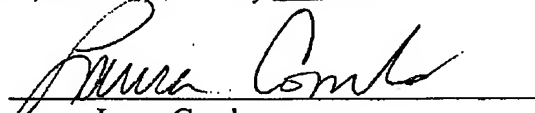
Kerrie A. Laba, Reg. No. 42,779  
400 W. Maple Road, Ste. 350  
Birmingham, MI 48009  
(248) 988-8360

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Laura Combs